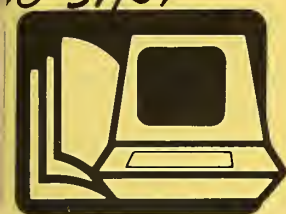


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AGRICULTURAL LIBRARIES INFORMATION NOTES

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Library

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EVALUATING LASER VIDEODISK TECHNOLOGY FOR THE DISSEMINATION OF AGRICULTURAL INFORMATION

by

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The National Agricultural Library (NAL) is evaluating the use of laser videodisk technology as a means for disseminating agricultural information. The study is being funded as part of a strategic planning effort by the United States Department of Agriculture (USDA) to assess long-range opportunities in the utilization of technology as it relates to agriculture and agricultural information.

The focus of the evaluation is the potential of laser videodisk technology used in conjunction with microcomputers for storage and dissemination of agriculturally related full-text data bases. In September, 1984, the National Agricultural Library contracted with LaserData, Inc. of Cambridge, Massachusetts, to develop a system utilizing these two technologies.

Since end user experience is a critical part of this evaluation, the system is installed in three locations: The National Agricultural Library, Purdue University Library, and the National Pork Producers Council, Des Moines, Iowa. The evaluation is being coordinated by the Agricultural Information Service at Purdue University with participation by pork producers, researchers, and various USDA personnel.

Laser technology has the potential to significantly change the means by which publications and data bases are stored, distributed, and used. The results of this evaluation will provide data on the user acceptance of microcomputer/laser videodisk systems as a means of access to textual agricultural information.



Reference Librarian Debbie Hanfman guides Karl Schneider, newest member of the Reference Staff, through a hands-on demo of the Pork Industry Handbook.

The data base we selected for this evaluation project is the Pork Industry Handbook (PIH). The Handbook in its printed form is a major teaching and resource tool of the pork industry. It is published jointly by Purdue University and the USDA Extension Service. The Handbook consists of 96 chapters in looseleaf form. Each chapter describes an aspect of the care and feeding of pigs. This publication was selected for its variety of material, i.e., text, pictures, and charts, as well as its high use within a specific segment of the agricultural community.

The Preparations

Once the Pork Industry Handbook had been selected for the evaluation project it had to be put into digital form in a format which could be processed by the retrieval software. There were two choices at this point. Since the Handbook was a printed publication created on a word processor, one alternative was to reformat the original keyed data. The other alternative was to key the full-text based on the printed copy. Because of the difficulty of identifying the elements of the text from the word processing file, the decision was made to key the full-text into a format which could be readily used for indexing and retrieval. A contract was let to BRS Information Technologies to design the full-text format and key the data.

A major consideration in the structuring of the full-text file was to have in-depth access which would include indexing at the word level and display of specific paragraphs. Access via author, title, chapter, and paragraph headings was also desired.

In addition to the full-text, BRS was able to key some portion of the charts in the Handbook. They also keyed the numbers and captions for the pictures and graphs. The full definition and keying activity took over a year to complete. However, in February 1985, the full-text file, complete with field identifiers, was received at NAL. After a quality review process, the tape was forwarded to LaserData to be indexed and stored on the laser videodisk.

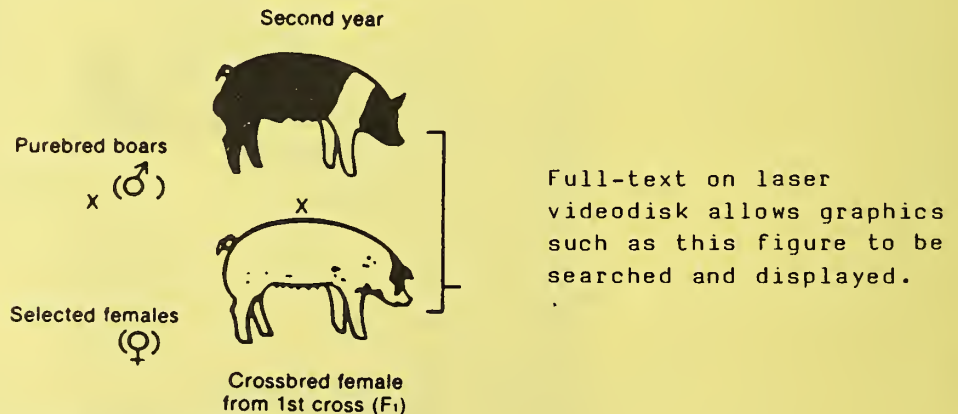


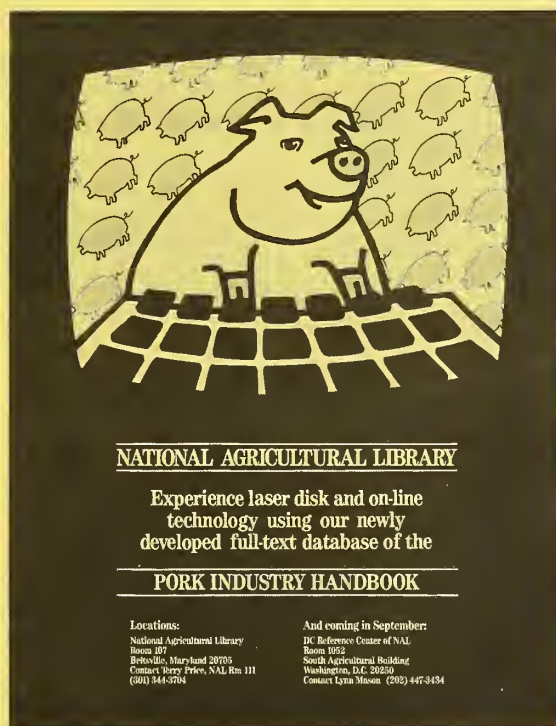
Fig. 6. Restructured Version of Figure 4. Two of Three Images.

The Pork Industry Handbook contains about 2 million characters. The disk capacity is 800 million characters. This high storage capacity allowed us to include 200,000 current AGRICOLA records on the videodisk. (AGRICOLA is the NAL's bibliographic data base containing over 2 million citations for monographs, serials, and journal articles in the Library's collection.)

By using bibliographic records as part of this project we will be able to experiment with the use of microcomputer technology to support a stand-alone "online" catalog. While the AGRICOLA records are defined as a separate file for access, it can be used in conjunction with the Handbook.

"In" analytic or indexing records describing each of the 96 chapters of the Pork Industry Handbook are included in the AGRICOLA subset on videodisk. This means that end users interested in items on pork production but not aware of the Handbook can approach the bibliographic file and through subject oriented searches retrieve citations to the Handbook. At that point because both the AGRICOLA citations and the full-text of the Handbook are on the same videodisk, the user can easily retrieve the appropriate full-text paragraphs for viewing on the same terminal.

The Handbook can also be accessed directly without having to go through the bibliographic file. Access is provided to each word in the text of the Handbook, excluding a limited list of stop words, as well as through the author and title for each chapter. In addition, chapter subheadings, paragraph headings, and captions for tables and other graphics provide access.



Poster art displayed in the lobby of NAL creates an awareness of the laser disk and online, full-text data base. Walk in visitors and patrons are invited to experience this new technology.

The System

Videodisk technology is based on laser optics which uses light beams to read and write data. The result is a data storage technique which offers very high density, high quality video, random access and a mixed storage format utilizing both digital and analog data.

The retrieval software used to index, retrieve, and display both the Pork Industry Handbook and the AGRICOLA bibliographic records is BRS/Search. The retrieval system has a menu approach to subject searching which is powerful and easy to use. This is especially critical since most of our users will be novices in online searching. The capability to access any word in the full-text and combine words using Boolean operators means more precise searching.

The Evaluation

A major aspect of the evaluation project will be to identify potential users and make them aware of the availability of the system. At Purdue, one approach will be to coordinate with animal science faculty and introduce the system to the students as part of their class assignments. At the National Agricultural Library in Beltsville, members of the agricultural research and extension community will be invited to make use of the system. At the National Pork Producers Council in Des Moines, members of the pork producers community will be included in the evaluation project.

There is a growing awareness within the agricultural community of the great potential of computer technology for information access and delivery. The videodisk/microcomputer evaluation as well as other related projects at NAL will provide significant information on the potential uses of these technologies. The question that remains is "What will be the next step?"

This is a condensed version of the author's article, which appeared in Information Technology and Libraries, Vol. 4, No. 2, June 1985, the official publication of the Library and Information Technology Association (a division of the American Library Association).

ONLINE '85

NAL staff will be demonstrating the Pork Industry Handbook laser videodisk during the Online '85 Conference at the New York Hilton, November 4-6. Stop by Booth No. 110. We welcome your evaluation.



NEWS NOTES

For further information contact: John Forbes, Network Coordination, National Agricultural Library, Beltsville, MD 20705, (301) 344-1563.



NAL EEO OFFICER RECIPIENT OF HACE AWARD FOR MINORITY RECRUITMENT EFFORTS



Sue Trevino, Executive Board member of HACE, presents Armando Fernandez with Most Outstanding Employee Award.

Armando E. Fernandez, NAL Equal Employment Opportunity Officer, is the recipient of the Most Outstanding Employee Award presented by the USDA Hispanic American Cultural Effort (HACE). In ceremonies held September 18, Fernandez was recognized for his "effective outreach and untiring recruitment efforts which have resulted in the actual hiring and placement, not only of Hispanics, but of women and other minorities." His accomplishments include designing the first known upward mobility plan in the Federal Government which formally allowed for the training and placement of library technicians into librarian positions; initiating and implementing within NAL the Federal Junior Fellowship Program; and initiating and recruiting for an "1890 Visiting Librarian Program."



ILLINOIS JOINS USDA/NAL REGIONAL DOCUMENT DELIVERY SYSTEM

The University of Illinois joined the USDA/NAL Regional Document Delivery System August 1, adding both a new state and region to the 11-year old system. A Cooperative Agreement signed by the two institutions provides for a startup period during August and September with renewal for a full year of service beginning in FY-1986.

The Regional Document Delivery System is a cooperative system whereby the National Agricultural Library (NAL) and land-grant university libraries in 36 states plus Puerto Rico work together to provide library lending and photocopy services to USDA employees located within an eight region network. USDA employees were notified on July 9 to begin sending their requests for loan and photocopy services to the University of Illinois. Requests which cannot be filled by the University of Illinois will be forwarded to the NAL/Beltsville.

The majority of the University of Illinois' agriculture collection is located in the Agricultural Library and in the main stacks of the University Library. Ms. Carol Boast was appointed director of the Agricultural Library in August 1984, filling a post that had been vacant a number of years, and has been instrumental in strengthening cooperation between NAL and the University of Illinois in this subject area.

Illinois is also cooperating with NAL in evaluating telefacsimile as a means of aiding document delivery, and a number of other cooperative endeavors.

1985 OBERLY AWARD FOR BIBLIOGRAPHIC EXCELLENCE

James E. Simon, Alena F. Chadwick, and Lyle E. Craker are the recipients of the 1985 Oberly Award for bibliographic excellence in agriculture and the related sciences. They are the authors of Herbs, An Indexed Bibliography, 1971-80, published in 1984 by Archon Books.

The Oberly Award, given biennially since 1925, is administered by the Science and Technology Section, Association of College and Research Libraries, American Library Association. The Award carries a monetary prize supported in part by grants from the The Associates of the National Agricultural Library, Inc., and the Council on Botanical and Horticultural Libraries.

Herbs, An Indexed Bibliography, 1971-80 is subtitled the scientific literature on selected herbs, and aromatic and medicinal plants of the temperate zone. It is a compendium of nearly 8,000 citations covering 64 major commercially significant herbs, from angelica to jasmine to oregano, wintergreen, and yarrow.

James E. Simon is currently Assistant Professor, Department of Horticulture, Purdue University. Alena F. Chadwick is Branch Reference Librarian at the University of Massachusetts, Amherst. Lyle E. Craker is Professor of Plant Physiology, Plant and Soil Science Department, University of Massachusetts, Amherst.



RETIRE NAL BIBLIOGRAPHER DIES

It is with sadness that we note the passing of Eli Hareide who died recently in Oslo, Norway, where she had been a resident for many years after retiring from NAL in 1970. Eli worked as a bibliographer in the then Bibliography Division which produced the Bibliography of Agriculture. She specialized in soil science and the Scandinavian agricultural literature.



Long-time farm broadcaster Layne Beaty poses with present and retired colleagues of USDA's Radio and Television Division at a recent NAL reception honoring Beaty and the publication of The Papers of Layne R. Beaty: A Register of His Papers in the National Agricultural Library. From (l.) to (r.) are Jules Renaud, Larry Quinn, Beaty, and Jack Towers. The collection of manuscripts and photos focus on the history of radio and television farm broadcasting, and particularly on the National Farm and Home Hour, the most popular radio program of all time in this country.

THE HERB SOCIETY OF AMERICA ANNOUNCES ANNUAL GRANT PROGRAM

The Herb Society of America is accepting applications for its annual grant program. A 1-year grant of up to \$4,000 is available to persons with a proposed program of scientific or academic investigations of herbal plants. The purpose of the program is to further the knowledge and use of herbs and contribute the results of the study and research to the records of horticulture, science, literature, history, art, or economics. Grant applications are available from: Mrs. Emmett Jones, Scholarship Chairman, 5759 S. Meadow Park Drive, Hales Corners, WI 53130.




INDEXING BRANCH HEAD APPOINTED




Shirley Edwards

Shirley Edwards was recently selected to fill the position of Head, Indexing Branch. Ms. Edwards has been with NAL since February of this year serving as leader of the Current Awareness Literature Service in the Information Systems Division. Before joining the NAL staff, she headed the unit responsible for compiling, maintaining, and publishing the Index-Catalogue of Medical and Veterinary Zoology.

Ms. Edwards will be applying her experience gained in her previous assignments directly to the many activities of the Indexing Branch, including a review of the List of Journals Indexed, use of the CAB Thesaurus, and most importantly, the production of records for AGRICOLA. 

A new directory, the Student Employment and Internships at Botanical Gardens and Arboreta for 1986 is available from the American Association of Botanical Gardens and Arboreta (AABGA). One-hundred summer employment positions and 235 internship positions at 78 botanical gardens, arboreta, and other horticultural institutions are included. To order, contact: AABGA, P. O. Box 206, Swarthmore, PA 19081, (215) 328-9145, Cost: \$1.50.

SAVINGS BOND CAMPAIGN NETS PATRIOTISM AWARD

In USDA ceremonies held October 2, NAL was presented with the Award for Patriotism to the U.S. Savings Bond Program. During the savings bond drive, 21 additional NAL employees enrolled under the payroll deduction plan. This increased NAL employee participation from 33 percent to 47 percent. The following employees are credited with contributing to the success of this year's program: Armando Fernandez, Coordinator, Mary Silva (E&I), Janet Wood (ACQ), Tamara Kavlik (ISD), Debbie Nelson (CAT), Cheryl Moore (IND), Dreama Black (SER), Holly Majkowski (ISD), and Carol Nelson (FNHES). 

NEW PUBLICATIONS FROM NAL

PRACTICAL AQUACULTURE LITERATURE: A BIBLIOGRAPHY. Compiled by Bille Hougart, James E. Miller, and Wallace C. Olsen. Beltsville, Md., U.S. Department of Agriculture, National Agricultural Library. (Bibliographies and Literature of Agriculture No. 35) August 1985. 40 p. \$9.95 (paper) and \$5.95 (microfiche). PB86-103447.


This bibliography provides an information resource for those interested in the application of available knowledge to aquaculture, or fish farming, and fisheries management. The primary subject focus is aquaculture production, marine or freshwater, of interest to producers. Intended for aquaculturists, fish farmers, extension educators, and others involved in technology transfer, the list of "how-to" publications was compiled from citations or documents provided by, and available from State and Federal agencies.

THE PROTECTION OF COTTON, JANUARY 1980-NOVEMBER 1984: CITATIONS FROM AGRICOLA CONCERNING DISEASES AND OTHER ENVIRONMENTAL CONSIDERATIONS. Compiled by Charles N. Bebee, Beltsville, MD., U.S. Department of Agriculture, National Agricultural Library and Washington, D.C., U.S. Environmental Protection Agency, Office of Pesticide Programs. (Bibliographies and Literature of Agriculture No. 37) August 1985. 194 p. \$22.95 (paper) and \$5.95 (microfiche). PB85-248391.

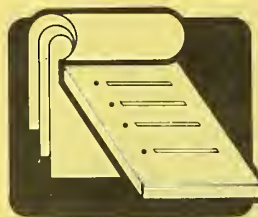
THE PROTECTION OF SOYBEANS, JANUARY 1980-NOVEMBER 1984: CITATIONS FROM AGRICOLA CONCERNING DISEASES AND OTHER ENVIRONMENTAL CONSIDERATIONS.

Compiled by Charles N. Bebee.
Beltsville, Md., U.S. Department of Agriculture, National Agricultural Library and Washington, D.C., U.S. Environmental Protection Agency, Office of Pesticide Programs. (Bibliographies and Literature of Agriculture No. 38) August 1985. 241 p. \$22.95 (paper) and \$5.95 (microfiche). PB86-101995.

The bibliographies are volumes two and three in a series of commodity-oriented environmental bibliographies jointly sponsored by the National Agricultural Library and the Office of Pesticide Programs, Environmental Protection Agency. The sources referenced include the majority of the latest available information from United States publications involving commodity protection throughout the growing and processing stages for each agricultural commodity.

Copies of the above bibliographies are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.
Telephone: (703) 487-4780. 

Peonies, a new AGRI-TOPICS by reference librarians Jayne T. MacLean and Susan Whitmore, Farming and Forestry Branch, is available free upon request. Send a self-addressed mailing label with request to Reference Branches, Room 111, National Agricultural Library, Beltsville, MD 20705.



**NEW SERIALS
RECEIVED
AT NAL**

AGRO INDUSTRIES: LE MAGAZINE DES IAA.
Paris, CEP Information Professions. m.
No. 1 (Sept. 1984)-

389.8 R326

BIOTECHNOLOGY SOFTWARE. New York, NY, Mary Ann Liebert, Inc. bi-m. Vol. 1, no. 1 (Sept./Oct. 1984)-

TA166.B46

JOURNAL OF THE GRASSLAND SOCIETY OF SOUTHERN AFRICA. Sunnyside, The Grassland Society of Southern Africa. q. Vol. 1, no. 1 (1984)-

SB197.J68

THE KEW MAGAZINE. Feltham, Middlesex, Royal Botanic Gardens. 4/yr. Vol. 1, pt. 1 (Apr. 1984)-

QK1.K46

LAMB & WOOL PRODUCTION FOR THE COMMERCIAL SHEEPMAN. Monticello, IN, Graphicom Inc. m. Vol. 1, no. 5 (Nov. 1984)-

SF371.L35

THE LAMB PRODUCERS JOURNAL: DEDICATED TO MODERN MANAGEMENT. Monticello, IN, Graphicom Inc. m. Vol. 1, no. 1 (July 1984)-

SF371.L35


MINNESOTA MANUFACTURERS REGISTER: MNI. Chicago, IL, Manufacturers News. a. 1st ed. (1984)-

HD9727.M6M46

OCLC MICRO. Dublin, OH, OCLC Online Computer Literature Center. bi-m. Vol. 1, no. 1 (Mar. 1985)-

Z678.9.044

THE SHEPHERD'S FRIEND: FOR THOSE WHO CARE FOR SHEEP. Monticello, IN, Graphicom Inc. m. Vol. 1, no. 1 (April 1985)-

SF371.S535 

QUICK BIBLIOGRAPHIES

The bibliographies in this series are primarily computerized online or batch bibliographies emanating from searches performed by the NAL reference staff in response to customer requests.

Searches are selected for inclusion based on the currency of the topic, interest among clientele, relative length and probable value to a larger audience. All titles in this series will be listed for 6 months. Revisions or updates will be renumbered and reannounced. Only one copy of a title will be sent; however, requesters may make copies. To request a copy of a Quick Bibliography send the title, series number, and a return addressed label to:

Reference Branches, Room 111
National Agricultural Library
Beltsville, MD 20705

NAL--Q.B.--85-27. MEDICAL BOTANY AND HERBAL MEDICINE. 270 citations from AGRICOLA. Languages none excluded. Searched by Jayne T. MacLean. July 1985.

NAL--Q.B.--85-28. U.S.-CANADA; AGRICULTURAL MARKET RELATIONS, 1970-85. 172 citations from AGRICOLA. English only. Searched by Mary E. Lassanyi. August 1985.

NAL--Q.B.-85-29. U.S.-MEXICAN TRADE AND MARKET RELATIONS, 1970-85. 136 citations from AGRICOLA. Languages none excluded. Searched by Mary E. Lassanyi. August 1985.

NAL--Q.B.-85-30. US-SOVIET TRADE RELATIONS, 1970-84. 174 citations from AGRICOLA. Languages none excluded. Searched by Mary E. Lassanyi. September 1985.

NAL--Q.B.--85-31. THE ROLE OF FOREIGN TRADE IN AGRICULTURE, 1976-84. 195 citations from AGRICOLA. Languages none excluded. Searched by Mary E. Lassanyi. September 1985.

NAL--Q.B.--85-32. HORTICULTURAL THERAPY, 1979-85. 41 citations from AGRICOLA. English only. Searched by Henry Gilbert. September 1985. Updates 81-05.



SURPLUS PUBLICATIONS AVAILABLE

The following publications are surplus to the needs of the National Agricultural Library's collection. They will be made available to any interested organization that regularly sends free publications to NAL. This includes most Federal, land-grant, and agricultural research institutions as well as many others. Foreign institutions will need to provide a U.S. mailing address or make other special arrangements with U.S. sources for shipment of material.

If interested, please write to: National Agricultural Library, USDA, Attn: Collection Development, Room 204, Beltsville, MD 20705, or call Leslie Kulp, (301) 344-1562.

1. Bulletin of the Torrey Botanical Club - v. 23, 1896 - v. 27, 1902 and v. 42, 1915 - v. 46, 1919 (bound).
2. Forest Notes - no. 72, 1961 - no. 119, 1974 (missing nos. 103 and 114).
3. Japanese Journal of Zoology - v. 1, 1922-27 - v. 9, 1940-41 (bound).
4. Journal of Agricultural Sciences - v. 54, 1960 - v. 64, 1965 and v. 78, 1972 - v. 83, 1974 (bound).
5. Journal of Soil Science - v. 1, 1950 - v. 23, 1972.
6. Perfumery and Essential Oil Record - v. 39, 1948 - v. 54, 1963 (bound; v. 45, 1954 missing).
7. Plant Disease Reporter - v. 42, 1958 - v. 59, 1975 (many vols. bound; some issues missing).
8. Schweizer Archiv fur Tierheilkunde - v. 104, 1962 - v. 117, 1975 and v. 120, 1978 (bound).





NEW PUBLICATIONS OF NOTE

*AGRICULTURAL PROGRESS IN ECUADOR, 1970-82. Washington, D.C., U.S. Department of Agriculture, Economic Research Service. 1984. 40 p. (Foreign Agr. Economic Rpt. No. 208). \$2.25. S/N 001-019-00347-2.

**APPLICATION OF DISCRETE OPTIMIZATION FOR DEVELOPING ECONOMICALLY EFFICIENT MULTIPLE-USE PROJECTS. Ogden, UT, U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. March 1985. 22 p. (FSGTR/INT No. 178). \$7.00. PB85-18436/XAB.

**EFFECT OF ACCELERATED AGING ON THE BENDING STRENGTH AND STIFFNESS OF COM-PLY (TRADE NAME) TRUSS LUMBER PRODUCED IN A PILOT PLANT. Asheville, NC, U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station. February 1985. 9 p. (FSRN-SE No. 330). \$7.00. PB85-188092/XAB.

*FARMERS' GUIDE TO TRADING AGRICULTURAL COMMODITY OPTIONS. Washington, D.C., U.S. Department of Agriculture, Economic Research Service. 1984. 24 p. (Agric. Info. Bull. No. 463). \$1.50. S/N 001-019-00331-6.

*GROWING CAULIFLOWER AND BROCCOLI. Washington, D.C., U.S. Department of Agriculture, Science and Education. 1984. 14 p. (Farmers' Bull. No. 2239). \$1.00. S/N 001-000-04426-5.

THE HANDBOOK OF SOFT FRUIT GROWING. Sept. 1985. 181 p. \$10.95. Order from ISBS, P.O. Box 1632, Beaverton, OR 97075. Tel: (503) 292-2606.

MICROS AT WORK: CASE STUDIES OF MICROCOMPUTERS IN LIBRARIES. 1985. 148 p. \$36.50. Order from Knowledge Industry Publications, Inc., 701 Westchester Ave., White Plains, NY 10604. Tel: (914) 328-9157.

**OPEN CHANNEL JUNCTIONS WITH SUPERCRITICAL FLOW. Beltsville, MD, U.S. Department of Agriculture, Agricultural Research Service. January 1985. 33 p. (ARS No. 14). \$8.50. PB-186252/XAB.

***PERFORMANCE MEASUREMENT FOR PUBLIC SERVICES IN ACADEMIC AND RESEARCH LIBRARIES. Mary J. Cronin. OMS Occasional Paper No. 9. February 1985. 36 p. \$15.00.

**PREDICTING DUFF AND WOODY FUEL CONSUMED BY PRESCRIBED FIRE IN THE NORTHERN ROCKY MOUNTAINS. Ogden, UT, U.S. Department of Agriculture, Forest Service. March 1985. 29 p. (FSRP/INT No. 337). \$8.50. PB85-186203/XAB.

***PRESERVATION EDUCATION. SPEC Kit No. 113. Policy statements, staff training materials, examples of reader education and donor information and exhibit descriptions. April 1985. 110 p. \$20.00.

*WORLD FACTBOOK. Washington, D.C., Central Intelligence Agency. 1985. 189 p. \$14.00. S/N 041-015-00159-1.

*Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Tel: (202) 783-3238.

**Order from National Technical Information Service, Identification Section, 5285 Port Royal Road, Springfield, VA 22161. Tel: (703) 487-4780. All titles listed are available in microfiche for \$5.95 each.

***Order from Office of Management Studies, Association of Research Libraries, 1527 New Hampshire Ave., N.W., Washington, D.C. 20036. Tel.: (202) 232-3656. (Outside the U.S. and Canada, add \$5.00 for parcel post shipping. Prepaid only. Libraries that are members of ARL receive SPEC kits for \$10.00.)





AGRICULTURE DATEBOOK

November 4-6: NATIONAL CONFERENCE OF THE NATIONAL ASSOCIATION OF GOVERNMENT COMMUNICATORS. Loew's L'Enfant Plaza, Washington, D.C. "Communicating the Right Message." Contact: NAGC, 80 S. Early Street, Alexandria, VA 22304. Tel.: (703) 823-4821.

November 10-12: NATIONAL ASSOCIATION OF STATE UNIVERSITY AND LAND-GRANT COLLEGES ANNUAL MEETING. Crystal City Hyatt Regency, Arlington, VA. Contact: NASULGC (202) 293-7120.

November 14-16: FUTURE FARMERS OF AMERICA NATIONAL CONVENTION. Kansas City, MO. Contact: Cameron Dules (703) 360-3600.

November 17-21: THIRD INTERNATIONAL DRIP/TRICKLE IRRIGATION CONGRESS. Centre Plaza Holiday Inn, Fresno, CA. Sponsored by the American Society of Agricultural Engineers and the Irrigation Association. The Cooperative State Research Service is a cooperative sponsor. Contact: ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659.

December 1-4: VIDEODISC, OPTICAL DISK, AND COMPACT DISC CONFERENCE AND EXPOSITION. Wyndham Franklin Plaza Hotel, Philadelphia, PA. Contact: Judith Paris, Conf. Chairperson, P. O. Box 3483, McLean, VA 22103. Tel.: (703) 448-5910.

December 2-4: USDA'S 62ND ANNUAL AGRICULTURAL OUTLOOK CONFERENCE. Washington, D.C. Contact: Sally Michael. Tel.: (202) 447-5447.

December 4-5: INSECTICIDES, FUNGICIDES, AND PEST IDENTIFICATION FOR AGROLOGISTS. University of Guelph, Ontario. Contact: Nancy McPherson, Continuing Education, University of Guelph, Guelph, Ontario N1G 2W1.

December 8-10: 43RD PROFESSIONAL AGRICULTURAL WORKERS CONFERENCE. "Human Resources Development in Rural America - A Myth or Reality." Tuskegee Institute, Tuskegee, AL. Contact: T.T. Williams, Human Resources Development Center, P.O. Box 681, Tuskegee Institute, Tuskegee, AL 36088. Tel.: (205) 727-8764.

December 16-17: 5TH INTERNATIONAL SYMPOSIUM ON AGRICULTURAL WASTES. Hyatt Regency, Illinois Center, Chicago, IL. Contact: John M. Sweeton, Chairman, Program Committee of ISAW-85, 303 Scoates Hall, Texas A&M University, College Station, TX 77843. Tel.: (409) 845-9795.

1986

January 20-22: BIO/TECHNOLOGY LOOKS TO THE NEXT DECADE. Clarion Hotel, New Orleans, LA. Contact: Nature Publishing Co., 65 Bleecker St., New York, NY 10012. Tel.: (212) 477-9600.

January 20-24: INTERNATIONAL SYMPOSIUM ON AGRICULTURAL ENGINEERING. Pretoria, South Africa. Contact: The Symposium Secretariat, S.337, CSIR, P.O. Box 395, Pretoria 00001, South Africa.

March 3-5: 28TH ANNUAL NFAIS CONFERENCE. "Innovations in Information Delivery." Philadelphia, PA. Contact: NFAIS, 112 South Sixteenth St., Philadelphia, PA 19102. Tel.: (215) 563-2406.

March 17-21: SECOND INTERNATIONAL CONFERENCE ON THE APPLICATION OF MICRO-COMPUTERS IN INFORMATION DOCUMENTATION AND LIBRARIES. Baden-Baden, Federal Republic of Germany. Contact: Deutsche Gesellschaft fuer Dokumentation e.V. (DGD), Westendstrasse 19, D - 6000 Frankfurt am Main 1, Federal Republic of Germany.

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March 24-28: 4TH CHEMRAWN WORLD
CONFERENCE ON THE GLOBAL OCEAN--ITS
CHEMISTRY AND RESOURCES. Woods Hole,
MA. Contact: CHEMRAWN IV Coordinating
Office, Oceanography Program,
University of Michigan, 2455 Hayward
Ave., Ann Arbor, MI 48209-2143. Tel.:
(313) 763-2316.

May 7-13: 59TH INTERNATIONAL
AGRICULTURAL SHOW. Hanover, Germany.
Contact: German Agricultural Society,
Zimmerweg 16, D-6000 Frankfurt am
Main 1.

June 18-20: SIXTH ANNUAL CONFERENCE ON
MICROCOMPUTERS IN EDUCATION AND
TRAINING. Arlington, VA. Contact:
Society for Applied Learning
Technology, 50 Culpeper St., Warrenton,
VA 22186. Tel.: (703) 347-0055.

June 23-27: INTERNATIONAL SYMPOSIUM ON
WINDBREAK TECHNOLOGY. Lincoln Hilton
Hotel, Lincoln, NE. Contact: James B.
Brandle, Dept. of Forestry, Fisheries, and
Wildlife, 101 Plant Industry, University of
Nebraska, Lincoln, NE 68583-0814.

August 11-20: 22ND INTERNATIONAL
HORTICULTURAL CONGRESS. Davis, CA.
Contact: Carolyn Norlyn, Campus Events and
Information Office, University of
California, Davis, CA 95616. Tel.: (916)
752-2816. 

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